REMARKS

Claims 19-25 and 41-43 are presently pending in the captioned application with no claim amendments being made in the current filing.

Applicants' representative conducted an Interview with the Examiner on May 4, 2005, and would like to thank the Examiner for his time. During the Interview, Applicants' representative showed a § 1.132 Declaration by Ms. K. Tanaka to the Examiner and also showed JCPDS cards showing the compositional evidence and powder X-ray diffraction analysis of both the chalcoalumite of the prior art and the presently claimed hydrotalcite.

The Examiner noted that the § 1.132 Tanaka Declaration which was proffered in the earlier Response of November 22, 2004, but not completed until recently, should differentiate the presently claimed product from the compositions of the cited references.

The Examiner further noted that the JCPDS cards submitted as Documents 1 and 2 relating to chalcoalumites and hydrotalcites, respectively, appear to show the different crystal structures of the chalcoalumites in comparison to the hydrotalcites of the cited references. The Examiner stated that upon close study, the Documents 1 and 2 should show that the claimed hydrotalcites are not obvious variants over the chalcoalumites of the references

thereby overcoming the obviousness-type double patenting rejections.

All of the Examiner's points are noted with appreciation and the following arguments are made in support thereof.

Accordingly, Applicants respectfully request the Examiner to consider the evidence and arguments and allow all presently pending claims.

1. **Rejection of Claims 19-25 and 41-43 under 35 U.S.C. § 103(a)**

The Office Action finally rejects claims 19-25 and 41-43 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,351,814 ("Miyata *et al.*"), alone or in view of U.S. Patent No. 6,306,494 ("Takahashi *et al.*"). The Office Action states:

> Miyata teaches in column 2, 4, and 5 a hydrotalcite with SiO3 anion. A sulfate ion can also be chosen. Forming the claimed material from the anions disclosed is an obvious matter of optimization to teachings; In re Boesch 205 USPQ 215. The properties not reported are deemed possessed due to the similarity of the size and composition to what is presently disclosed.
>
> The silicate anion appears to exist in equilibrium (eg. as a dimer or tautomer) with the other silicic acid anion recited and thus is not patentably distinct in that is expected to inherently be present. Further, the phrase "silicate anion" in the references suggests

all forms thereof. See column 4 of 6306494.

Applicants respectfully traverse this rejection because Miyata *et al.* fails to teach or provide any motivation or suggestion to one of ordinary skill in the art to make a porous hydrotalcite crystal having a BET specific surface area of 50 to 400 m^2/g and having the required component of A_1^{n-} being a silicic acid ion ($HSi_2O_5^-$). The *prima facie* case of obviousness has not been met because both limitations are not expressly taught or suggested by either reference.

Even assuming *arguendo* that a *prima facie* case of obviousness has been established, the § 1.132 Tanaka Declaration, which was proffered in the earlier Response of November 22, 2004, and now submitted herewith shows that the compositions of Miyata *et al.* do not possess the presently claimed BET specific surface area of 50 to 400 m^2/g.

The rule of law

The Federal Circuit held that a *prima facie* case of obviousness must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 U.S.P.Q.2d 1016,

1023 (Fed. Cir. 1991); In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

However, even if a *prima facie* case of obviousness has been established, secondary considerations such as commercial success, long felt but unsolved need, failure of others, and unexpected results may nevertheless give rise to a patentable invention. Graham v. John Deere Co., 148 U.S.P.Q. 459 (1966). For example, evidence such as superiority in a property the compound shares with the prior art can rebut a *prima facie* case of obviousness. See In re Chupp, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987).

Pending claim 1

In the present application, independent claim 1 recites a porous hydrotalcite compound represented by the following formula (1):

$$M^{II}_{1-x}Al_x(OH)_2(A_1^{n-})_a(A_2^{m-})_b \cdot yH_2O \qquad (1)$$

wherein M^{II} is Mg^{2+} or/and Zn^{2+},

A_1^{n-} is a silicic acid ion ($HSi_2O_5^-$) and a sulfuric acid ion (SO_4^{2-}), or a silicic acid ion ($HSi_2O_5^-$),

A_2^{m-} is an anion selected from the group consisting of CO_3^{2-}, NO_3^-, Cl^- and OH^-,

x and y satisfy $0.50 < x < 0.80$ and $0 < y < 2$, and

a and b satisfy $0.50 < na + mb < 0.80$, and

having a BET specific surface area of 50 to 400 m^2/g.

Miyata *et al.* does not render obvious the claimed invention

Miyata *et al.* fails to teach or suggest a hydrotalcite containing $HSi_2O_5^-$ as an anion and a BET specific surface area of 50 to 400 m^2/g. Miyata *et al.* instead teaches a fibrous hydrotalcite wherein the fibrous hydrotalcite is represented by the formula (1). See Miyata *et al.* at col. 4, line 62. Miyata *et al.* also teaches an A^{n-} (anion) in the formula (1) of CH^-, Cl^-, NO_3F^-, CO_3^{2-}, SO_4^{2-}, SiO_3^{2-}, HPO_4^{2-}, $[Fe(CN)_6]^{3-}$ but fails to teach the presently claimed $HSi_2O_5^-$.

Moreover, Miyata *et al.* relates to a fibrous hydrotalcite, which is not porous like the claimed invention and has a very small BET specific surface area of about 30 m^2/g or less. It would have been unobvious to make the claimed limitations because making a BET specific surface area of 50 to 400 m^2/g and A_1^{n-} being a silicic acid ion ($HSi_2O_5^-$) is not mere optimization of results-effective variables. Only when the claimed invention is practiced does one arrive at a porous hydrotalcite crystal having excellent absorptivity resolution, water resistance and light resistance as a

dye fix agent for water-color ink. See the specification at pages 15, 19, 24 and 26.

Applicants reiterate that nothing in Miyata *et al.* would suggest making the presently claimed limitations. Furthermore, requiring the A^{n-} (anion) to be $HSi_2O_5^-$ as an essential component and the making the BET specific surface area of 50 to 400 m^2/g such that the crystal is porous are not results effective variables for improving absorptivity resolution, water resistance and light resistance as a dye fix agent for water-color ink. See In re Antoine, 195 U.P.S.Q. 6 (C.C.P.A. 1977). The understanding that modifying the BET surface area to have a total pore volume of 0.50 to 2.00 ml/g as claimed in claim 23 would result in unexpectedly good properties as a dye fixing agent for water-color ink was unobvious at the time the invention was made.

Applicants further note that any possible admonition that it would have been "obvious to try" to vary the A^{n-} (anion) to be $HSi_2O_5^-$ as an essential component and making the BET specific surface area of 50 to 400 m^2/g is improper. This is because in some cases, what would have been "obvious to try" would have been to vary all parameters or try each of numerous choices until one possibly arrived at a successful result. Since the prior art fails to provide any indication whatsoever that the claimed limitations

result in improved properties as a dye fixing agent for water-color ink, it would not have been obvious to try to make the claimed composition incorporating all the presently claimed limitations. See In re O'Farrell, U.S.P.Q.2d 1673, 1681 (Fed. Cir. 1988).

Accordingly, a *prima facie* case of obviousness has not been established.

The § 1.132 Tanaka Declaration

Even assuming *arguendo* that a *prima facie* case of obviousness has been made, Applicants rebut the presumption with evidence presented in the § 1.132 Tanaka Declaration showing that none of the prior art compositions contain the presently claimed BET specific surface area of 50 to 400 m^2/g.

Experiments II-(a) to II-(5) of the Tanaka Declaration correspond to Examples 1-2 and 4-5 of Miyata *et al.* and were made as faithfully as possible to the teachings of the reference. The measured BET specific surface in all cases from Miyata *et al.* showed a range outside the presently claimed limitation of 50 to 400 m^2/g. See page 5, § 5 and Table 1 of the Tanaka Declaration.

Regarding the secondary reference, Takahashi *et al.*, Applicants note that the reference teaches a chalcoalumite, which is completely different from the presently claimed hydrotalcites.

Despite teaching any number of ions, Applicants note that the reference must be suitable for the intended purpose of the claimed invention. Since Takahashi *et al.* relates to a completely different compound than that of the claimed invention, there can be no assertion that such a relationship exists. Finally, Applicants point out that Takahashi *et al.* specifically teaches a BET specific surface area of not more than about 30 m^2/g, which is outside the presently claimed range. See Abstract of Takahashi *et al.*

Accordingly, Applicants respectfully submit the presently pending claims is unobvious over the cited reference and request that the Examiner reconsider and withdraw the rejections to the pending claims under 35 U.S.C. § 103.

2. Rejection of Claims 19-25 under judicially created doctrine of obviousness-type double patenting

The Office Action finally rejects claims 19-25 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 5,861,133 ("Okada *et al.*"). The Office Action states:

> Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim common subject matter, in that the present ions can be selected from the patent claims. Choosing

from a disclosure is an obvious matter of optimization; In re Boesch 205 USPQ 215.

Applicants respectfully traverse the obviousness type double patenting because claim 1 of Okada *et al.* relates to a "chalcoalumite compound" whereas the presently claimed invention relates to a hydrotalcite compound. Both compounds are completely different from each other in composition and in structure. In support thereof, Applicants submit two JCPDS cards for chalcoalumite and hydrotalcite showing that the composition and powder X-ray diffraction for each respective composition are completely unrelated to each other thereby repudiating the assertion that the presently claimed ions can be selected from those of Okada *et al.*

Rule of Law

A double patenting rejection of the obviousness-type is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. In re Braithwaite, 154 U.S.P.Q. 29 (C.C.P.A. 1967).

In determining whether a nonstatutory basis exists for a double patenting rejection, the first question to be asked is -

does any claim in the application define an invention that is merely an obvious variation of an invention claimed in the patent? If the answer is no, then an "obviousness-type" nonstatutory double patenting rejection is not appropriate. See MPEP 804 B1(2).

The same requirements for a *prima facie* case of obviousness apply, i.e. the reference must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

The claimed invention is not obvious over claim 1 of Okada *et al.*

The chalcoalumite compound of claim 1 of Okada *et al.* is a natural compound having an aluminum hydroxide represented by the following formula $CuAl_4SO_4(OH)_{12}\cdot 3H_2O$. See Okada *et al.* at col. 1, line 38. In contrast, the presently claimed hydrotalcite is a compound having magnesium hydroxide (or zinc hydroxide) as its basic components with parts thereof replaced with aluminum (Al^{3+}). The hydrotalcite compound and the chalcoalumite compound are not the same compounds. The JCPDS cards are submitted in support

thereof.

In particular, Document 1 is a copy of a JCPDS card 25-1430 showing the compositional and powder X-ray diffraction analysis for chalcoalumite. The card is the same referenced by Okada *et al.* at Table 1 at col. 4, line 14. Okada *et al.* teaches that the lattice spacing (dÅ) of chalcoalumite have the same d-values for each "int" 8.5 and have a monoclinic crystal system.

On the other hand, the compositional and powder X-ray diffraction analysis for hydrotalcite as shown by Document 2 is completely different from that of chalcoalumite. Hydrotalcite have a d-value of 16.11 at "int" 55 and have a rhombohedral structure.

The clear differences between the chalcoalumite of claim 1 of Okada *et al.* and the hydrotalcite of the presently claimed invention clearly overcome the assertion of a *prima facie* case of obviousness and thereby overcome the obviousness type double patenting rejection.

Accordingly, Applicants respectfully submit that the presently pending claims are not obvious under the judicially created doctrine of obviousness-type double patenting over Okada et al. and request that the Examiner reconsider and withdraw the rejection.

3. Rejection of Claims 19-25 under judicially created doctrine of obviousness-type double patenting

The Office Action finally rejects claims 19-25 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,306,494 ("Takahashi *et al.*"). The Office Action states:

> Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim common subject matter as explained above.

Applicants respectfully traverse the obviousness type double patenting because claim 1 of Takahashi *et al.* relates to a "chalcoalumite compound" whereas the presently claimed invention relates to a hydrotalcite compound. Both compounds are completely different from each other in composition and in structure. In support thereof, Applicants submit two JCPDS cards for chalcoalumite and hydrotalcite showing that the composition and powder X-ray diffraction for each respective composition are completely unrelated to each other thereby repudiating the assertion that the presently claimed ions can be selected from those of Takahashi *et al.*

Rule of Law

A double patenting rejection of the obviousness-type is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. In re Braithwaite, 154 U.S.P.Q. 29 (C.C.P.A. 1967).

In determining whether a nonstatutory basis exists for a double patenting rejection, the first question to be asked is - does any claim in the application define an invention that is merely an obvious variation of an invention claimed in the patent? If the answer is no, then an "obviousness-type" nonstatutory double patenting rejection is not appropriate. See MPEP 804 B1(2).

The same requirements for a *prima facie* case of obviousness apply, i.e. the reference must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

The claimed invention is not obvious over claim 1 of Takahashi *et al.*

The chalcoalumite compound of claim 1 of Takahashi *et al.* '494 is a natural compound having an aluminum hydroxide represented by the formula (1) in claim 1. See Takahashi *et al.* '494 at col. 28, line 22. In contrast, the presently claimed hydrotalcite is a compound having magnesium hydroxide (or zinc hydroxide) as its basic components with parts thereof replaced with aluminum (Al^{3+}). The hydrotalcite compound and the chalcoalumite compound are not the same compounds. The JCPDS cards are submitted in support thereof.

In particular, Document 1 is a copy of a JCPDS card 25-1430 showing the compositional and powder X-ray diffraction analysis for chalcoalumite. The card is the same referenced by Takahashi *et al.* at Table 1 at col. 4, line 57. Takahashi *et al.* teaches that the lattice spacing (dÅ) of chalcoalumite have the same d-values for each "int" 8.5 and have a monoclinic crystal system.

On the other hand, the compositional and powder X-ray diffraction analysis for hydrotalcite as shown by Document 2 is completely different from that of chalcoalumite. Hydrotalcite have a d-value of 16.11 at "int" 55 and have a rhombohedral structure.

The clear differences between the chalcoalumite of claim 1 of

Takahashi *et al.* and the hydrotalcite of the presently claimed invention clearly overcome the assertion of a *prima facie* case of obviousness and thereby overcome the obviousness type double patenting rejection.

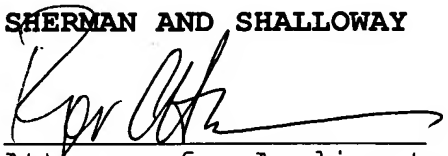
Accordingly, Applicants respectfully submit that the presently pending claims are not obvious under the judicially created doctrine of obviousness-type double patenting over Takahashi et al. and request that the Examiner reconsider and withdraw the rejection.

CONCLUSION

In light of the foregoing, Applicants submit that the application is now in condition for allowance. The Examiner is therefore respectfully requested to reconsider and withdraw the rejection of the pending claims and allow the pending claims. Favorable action with an early allowance of the claims pending is earnestly solicited.

Respectfully submitted,

SHERMAN AND SHALLOWAY



Attorney for Applicants
Roger C. Hahn
Reg. No. 46,376

SHERMAN AND SHALLOWAY
415 N. Alfred Street
Alexandria, Virginia 22314
703-549-2282